



**WESTERN US WATER TAG
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Confidential & Proprietary



COMPANY BACKGROUND

- **FOUNDED 2019**
- **KEY PATENTS AWARDED 2021**
- **HQ AUSTIN, TX**
- **MANUFACTURING IN OREGON**
- **US LOCATIONS: AUSTIN & HOUSTON, TX
NEWBERG, OR**

TEAM

An Experienced Team



AVI GHOSH
PRESIDENT

Four decades in international oil and gas exploration and business development



PAUL SCHMIDT
ENGINEERING

Four decades of mechanical engineering mining expertise on four continents



BLAIR MORRISON
FINANCE



SANDY HAHN
MARKETING

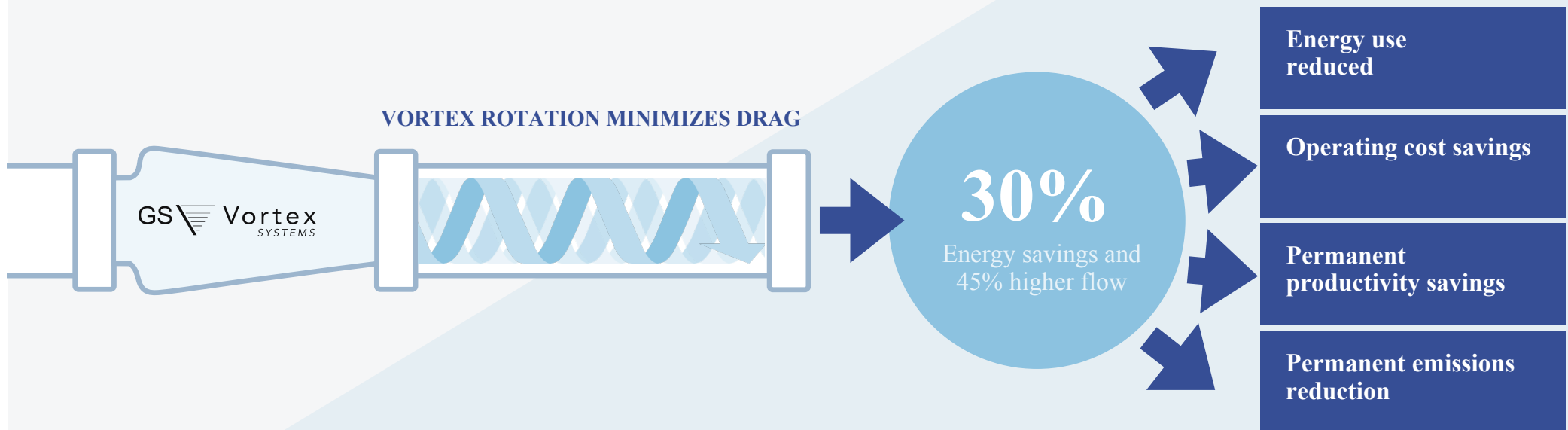


ROSS MALME
STRATEGY

OUR SOLUTION

Technology breakthrough in fluid flow efficiency.

Vortex Flow dramatically reduces flow friction to create unlimited low resistance pathways to use the full capacity of any pipe.



POWERFUL COMPOUND SAVINGS

Energy use
reduced

Operating cost savings

Permanent
productivity savings

Permanent emissions
reduction

OUR PRODUCT

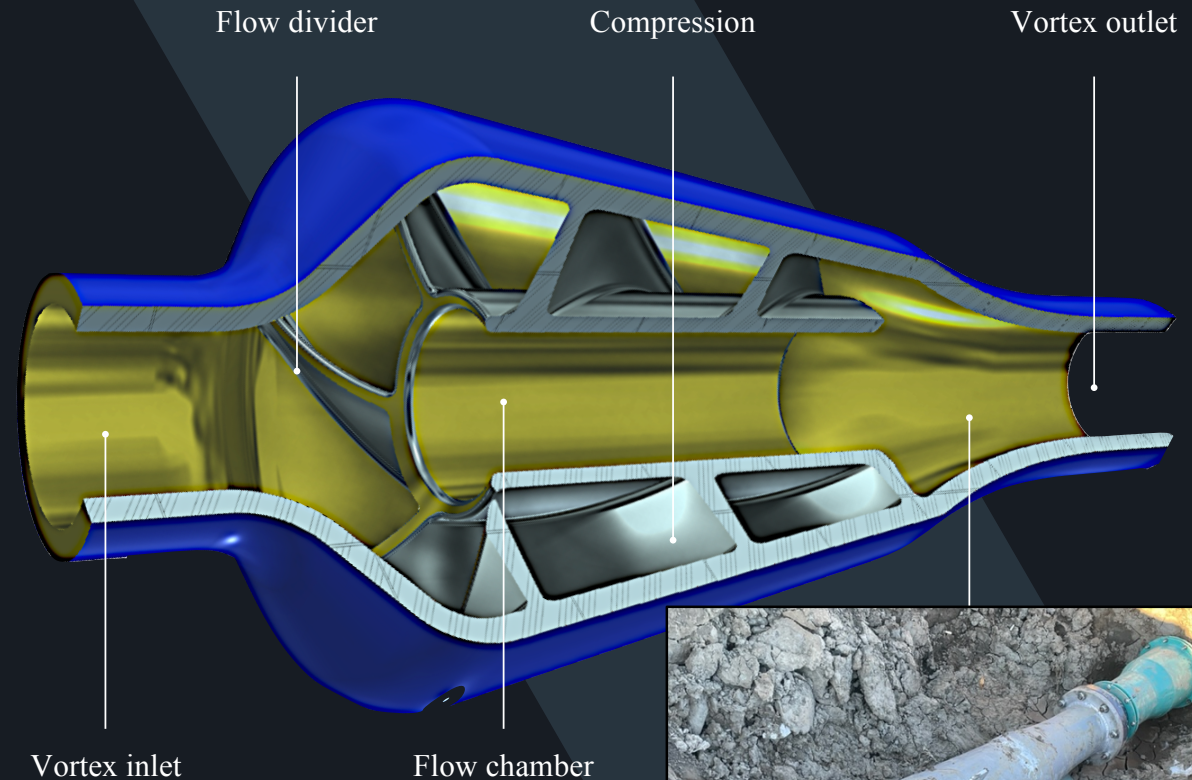
Radical concept with enormous, immediate impact.

STATIC DEVICE- NO MOVING PARTS

NEEDS NO ENERGY

REQUIRES NO MAINTENANCE

EASY RETROFIT ON EXISTING LINES



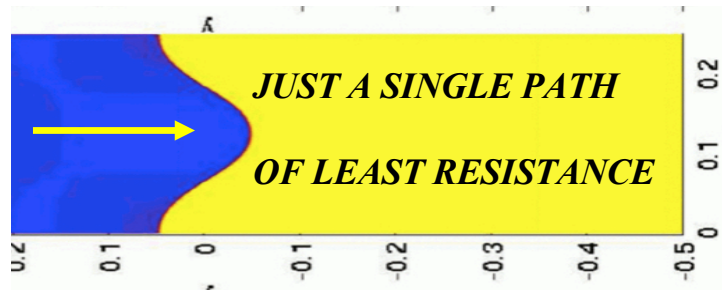
FOR RETROFITS

Plug and play into existing lines- less expensive than new pumps & pipes

FOR NEW BUILDS

Lower CapEx and OpEx from inception

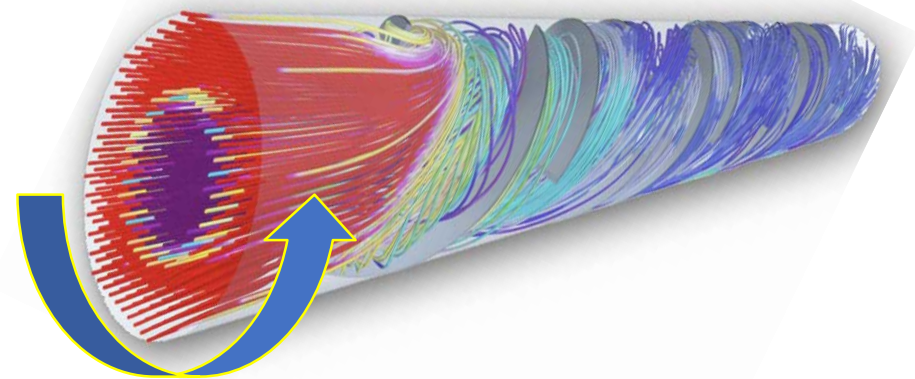
HOW VORTEX WORKS



PROBLEM

- Laminar flow sleeves drag against pipe walls & each other
- Drag results in **INEFFICIENT, COSTLY PUMPING**
- Flow productivity and operations continually constrained
- We must forever endure
 - Higher capex/opex/emissions of larger pumps, pipes ...
 - Ever rising project costs

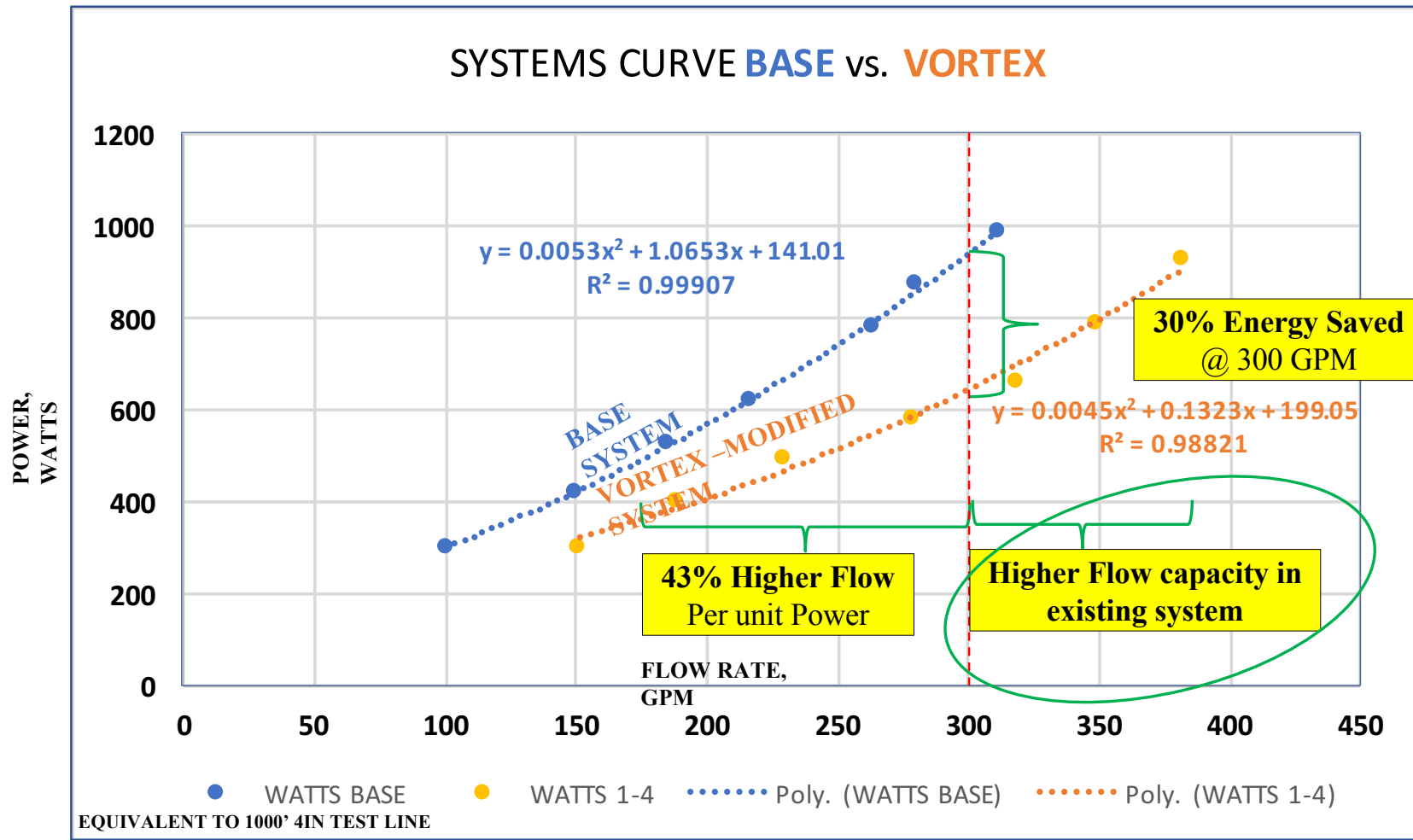
UNLIMITED FLOW PATHS OF LEAST RESISTANCE



SOLUTION

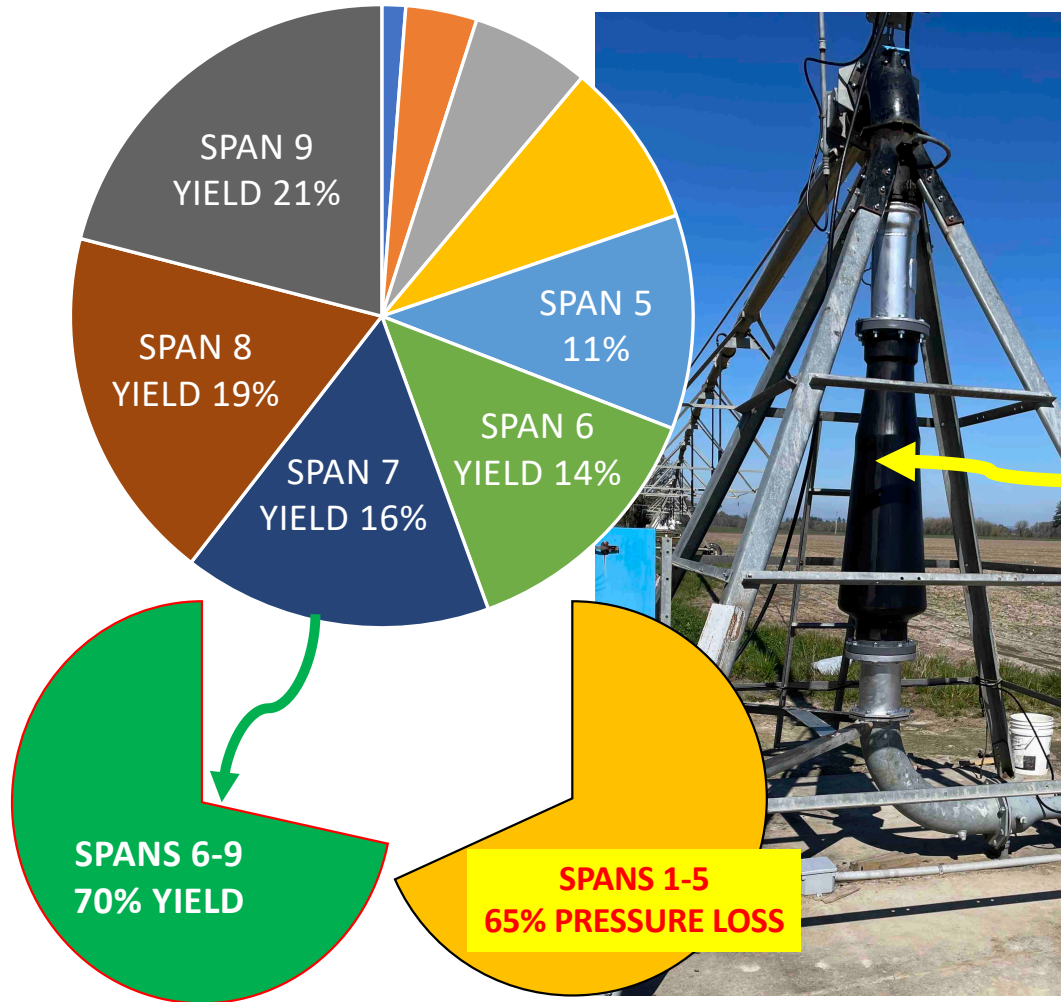
- **FLOW ROTATION REDUCES FRICTIONAL DRAG**
- **SIGNIFICANT ENERGY SAVINGS**
- **HIGHER FLOW ENABLED IN EXISTING LINES**
- **HIGHER PIPE VOLUMETRIC CAPACITY**
- **SIMPLE, INEXPENSIVE VORTEX RETROFIT**

VORTEX TESTED PERFORMANCE



SPAN YIELD %

VORTEX APPLICATION FOCUS



1/2 MILE IRRIGATION PIVOT

- 70% OF YIELD FROM LAST 4 SPANS
- INBOARD SPANS REDUCE PRESSURE ~65%
- 2/3 FLOW ENERGY WASTED ON 1/3 YIELD
- VORTEX REDUCES EACH SPAN'S FLOWING FRICTION LOSS
- COMBINES FLOW GAINS, RAISES YIELD
- REDUCES PUMPING COSTS / RUNS MORE PIVOTS
- EASY INSTALLATION, NO OPEX OR MAINTENANCE

CURRENT VORTEX APPLICATIONS

- **AGRICULTURAL IRRIGATION**
- **PIVOTS**
- **LINEAR SYSTEMS**
- **TRUNK LINES**
- **WATER CANNONS**

- **PNEUMATIC BULK TRANSFER, GRAINS/AGGREGATES**
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- **OIL INDUSTRY - MIDSTREAM WATER TRANSFER**

- **ALL FLUID FLOW OPERATIONS IN PAIN**
- **COST, CAPACITY, OR BOTTLENECK**

VORTEX INSTALLATION

- **VORTEX UNITS ARE FLANGE CONNECTION READY**
- **VICTAULIC COUPLING COMPATIBLE**
- **RAPID INSTALLATION, GIVEN ACCESS TO PIPE**
- **NO POWER REQUIRED**
- **UNI-DIRECTIONAL FLOW ONLY**
- **BALL VALVES PREFERRED IN FLOW SYSTEM**

VORTEX OPERATIONS & MAINTENANCE

- **VORTEX IS A PASSIVE PIPE COMPONENT**
- **POST INSTALLATION**
 - **NO ENERGY NEEDED**
 - **NO MAINTENANCE REQUIRED**
 - **NO TRAINING**
 - **NO DATA SECURITY ASPECTS**
- **DEVELOPING DATA COLLECTION CAPABILITY**



VORTEX PRODUCT CERTIFICATIONS

- **VORTEX MANUFACTURERS ARE CERTIFIED TO**
- **ISO 9001:2015/ AS9100D**
- **ASME B31**
- **CERTIFICATION WILL BE COMPLETED AS NEEDED FOR ALL CLIENT NEEDS**

VORTEX FLOW TECHNOLOGY SUMMARY

- VORTEX ***SIMULTANEOUSLY*** DELIVERS :
 - PUMPING COST REDUCTION
 - HIGHER FLOW CAPACITY IN EXISTING LINES
 - LOW COST DE-BOTTLENECKING
 - LOWER UNIT TRANSPORT COSTS
 - LOWER ENERGY USE
 - REDUCED EMISSIONS
- **FROM EXISTING SYSTEMS, WITHOUT COSTLY NEW EQUIPMENT**
- PROVEN IN AGRICULTURE
- READY FOR UTILITY PILOTS
- VORTEX IS THE NEW FLOW STANDARD

VORTEX COMPETITION

- **THERE IS NO DIRECT TECHNICAL COMPETITION OFFERING SUCH FLOW PRODUCTIVITY GAINS *FROM EXISTING SYSTEMS***
- **THE PRINCIPAL TECHNICAL COMPETITION IS NEW PUMPS AND PIPES**
- **THE PRINCIPAL OBSTACLES TO VORTEX ADOPTION IN ANY THEATRE ARE SUFFICIENT DEMONSTRATION OF EFFICACY AND RELIABILITY**
- **EXPENSIVE, SINGLE USE DRAG REDUCING ADDITIVES ARE USED IN O&G TRANSPORT**

VORTEX CASE STUDIES

- **PIVOT IRRIGATION IS OUR FOCUS - LOWERING OPEX AND RAISING YIELDS FOR FARMERS**
- **GOLDEN VALLEY FARMS: APRIL-SEPT 2024**
- **850 GPM RATED PUMP OPERATED AT 2000+ GPM WITH 2/4 VORTEX UNITS FITTED**
- **“ WE COULD NEVER RUN MULTIPLE PIVOTS BEFORE, OUR POWER SAVINGS ARE 30% AND CROP YIELDS ARE UP 15%”**
- **HARLAN MIERSMA: JAN 2021-PRESENT**
- **“I HAD DOWNTIME FROM POOR FLOW AND LINE SEDIMENTS ALMOST WEEKLY BEFORE VORTEX. I HAVEN’T LOST A DAY SINCE INSTALLATION. BEST INVESTMENT I’VE EVER MADE.**
- **PETER DEHAAN: SEPT 2023-PRESENT**
- **“I WAS SCEPTICAL BUT THE TEST INSTALLATION SHOWED OVER 35% ENERGY SAVINGS AND ABOUT 18% YIELD GAINS SO I’M INSTALLING MORE AS SOON AS POSSIBLE. I CAN JUST FIT IT AND FORGET IT.”**

VORTEX UNIT COSTS

- **VORTEX UNIT COSTS ARE A FUNCTION OF MATERIALS AND SIZES**
- **POLYMER 8" \$8K**
- **ALUMINUM 8" ~ \$15K**
- **CAST IRON 8" ~\$18K**

- **LARGER SIZES CAN BE PRODUCED TO ORDER AND WITH SUITABLE LEAD TIMES**

NEXT STEPS

- **PILOT OPPORTUNITIES WELCOME**
- **VISIT OUR FLOW FACILITY IN OREGON**
- **PARTICIPATE IN OUR NEW FLOW FACILITY,
HOUSTON, TX**
- **ALL QUESTIONS AND PROJECT REVIEWS WELCOME**
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THANK YOU

VORTEX IS THE NEW FLOW STANDARD

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